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## AUTHORSHIP AND NOMENCLATURE OF BUR CLOVERS (MEDICAGO) FOUND WILD IN THE UNITED STATES

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FEW genera have accumulated a literature so abounding in misquotations, misinterpretations, and misapplications as *Medicago*. The only monograph, the preliminary one by Urban, was published more than eighty years ago. Only a small fraction of the synonymy is included by that author, and his taxonomic treatment is more often a cataloguing of morphological types than a delimitation of biological entities. The same can be said of most of the Old World floras. Lowe's *Manual Flora of Madeira* is almost unique in supplying field observations, and synonymy in critical detail. Recent European floras (e. g., Willi Christiansen, *Neue kritische Flora von Schleswig-Holstein*, 1953) repeat the treatment of Urban with nomenclatural alterations made by Burnat and Briquet, or (P. Fournier, *Les Quatre Flores de la France*, 1946) revert to an assortment of invalid and quite unjustifiable names. Hylander's *Nomenklatorische und systematische Studien* (1945) unfortunately mention only one species, *M. minima*, with an erroneous synonymy and a conclusion which I consider incorrect. What started as a seemingly minor routine task, checking the nomenclature of the species in my *Flora of North Central Texas* (which includes 6 of the 9 generally accepted as part of the North American flora), proved to be the most laborious and intricate bibliographic problem encountered in preparing the entire work.

*M. sativa* L., *M. falcata* L., and *M. lupulina* L. present no special difficulties. They are therefore not discussed here,



beyond mentioning that *M. lupulina* var. *glandulosa* Neilreich is in my opinion only a minor variation not worthy of varietal rank. The remaining species are a very different matter. The following annotated list gives the names and authorities correct under present rules of nomenclature, so far as I have been able to work them out. Synonymy is not complete, but is believed to include all names of importance in arriving at the accepted nomenclature, and those current in the United States.

*M. ARABICA* (L.) Hudson, Fl. Ang. 288. 1762. The same combination published later by Allioni, Fl. Pedem. 1: 315. 1785.—*M. polymorpha* var. *arabica* L., Sp. Pl. 2: 780. 1753.—*M. cordata* Desr. in Lam., Encycl. Meth. Bot. 3: 636. Late 1791 or 1792. (Based on the preceding. Desrousseaux states that he does not believe it necessary to retain the Linnaean epithet for the plant “car elle est très-vraisemblablement aussi étrangère à l’Arabie que le *Vicia Benghalensis*, Lin., l’est au Bengale; que la *Scilla Peruviana*, Lin., l’est à l’Amerique; . . .”) —*M. maculata* Sibth., Fl. Oxon. 232. 1794. The same name, with *M. polymorpha* var. *arabica* and *M. cordata* listed as synonyms, published later by Willdenow, Sp. Pl. (ed. 4) 3 pt. 2: 1412. 1802.

Early English writers treated *M. arabica* and *M. polymorpha* (*M. hispida*, *M. denticulata*) as one species, under the former name. Bartalini (Cat. Piante . . . di Siena, 1776) listed *Medicago polymorpha arabica* as “nomen triviale” under the diagnostic phrase-name given by Linnaeus for the species *polymorpha*—that is, he used *arabica* in the sense of var. *typica*, or var. *polymorpha*. Nearly all later authors have consistently understood *M. arabica* in the sense that it is today, as delimited in Urban’s monograph. According to Urban (1883), the specimen in the Linnaean Herbarium under this name belongs to an entirely different species, “*M. ciliaris* Willd.” (considered by Urban as a species newly described in 1802, because of doubt as to its identity with *M. polymorpha* var. *ciliaris* L.; the older *M. ciliaris* (L.) Krock, 1790, was overlooked). The Linnaean citations are clear, agreeing with nearly all later usage, contradicting the specimen and the exceptional usage of Bartalini. There is no reason to depart from present usage in this case.



*M. LACINIATA* (L.) Miller, Gard. Dict. (ed. 8), *Medicago* 5. 1768. The same combination published later by Allioni, l. c. 316. 1785.—*M. polymorpha* var. *laciniata* L., l. c. 781. 1753. According to Urban, both the Linnaean specimen and the citations belong to Allioni's (Miller's) species.

*M. MINIMA* (L.) Bartalini, Catalogo delle Piante . . . alla Città di Siena, pp. 60–61. 1776. The same combination published later by Desrousseaux in Lam., l. c. 636. Late 1791 or 1792.—*M. polymorpha* var. *minima* L., l. c. 780. 1753. Urban states that there is no Linnaean specimen, but that citations indicate Bartalini's species; this is in accord with present usage.

As with *M. arabica*, some early post-Linnaean authors included *M. polymorpha* (*M. hispida*, *M. denticulata*) under this name. The combination is sometimes credited to Linnaeus's student, Grufberg (dissertation, *Flora Anglica*, 1754; Amoen. Acad. 4: 105, 1759), or, in accordance with the early custom of crediting student publications to the supervising professor, to Linnaeus himself. Section Five of Grufberg's work is a list of species "secundum *Systema sexuale*." In Section One, Grufberg explained that to allow easy comparison of the floras of Sweden and England, names of species found in both countries are put in italics. The list is in two columns per page, with bare name only, "brevitatis caussa," and with numbers after each species referring to entries in Ray's *Synopsis Stirpium Britanniae*, edition 3. Four medicagos are listed by name, each on a different line, followed by three lines of dashes, for species (or varieties) without Linnaean names listed by Ray:

<i>Medicago falcata</i>	331-1.
<i>lupulina</i>	331-2.
<i>polymor. arab.</i>	331-1.
<i>minima</i>	332-2.
.....	333-3.
.....	333-4.
.....	333-5.

It is possible that the bare name *minima*, on a line by itself, was intended to stand for a species. It is just as possible that a minor error in printing, or failure to indent because of lack of space, was responsible for the implied new combination. The second and third editions of *Species Plantarum* continue to list *minima* as a variety. There does not seem to be con-



vincing evidence of an unequivocal new combination prior to Bartalini's. Hylander (1945) writes "*Medicago minima* L. (Grufberg) 1754 (non *M. minima* Bartalini 1776)." This is certainly an error, perhaps due to the fact that Bartalini's "N. Tr." (nomen triviale) occupies the first line on page 61, followed without break by the phrase-names of species no. 4, including that of Linnaeus's *M. polymorpha*. But Bartalini placed his binomials after the phrase-names, not before. Those phrases belonging with *M. minima*, species no. 3, are at the bottom of the preceding page, and include unequivocally a reference to *M. polymorpha* var. *minima* L., with page citation from the second edition of *Species Plantarum*.

According to Urban, *M. polymorpha* var. *hirsuta* L., Sp. Pl. 2: 780, 1753, is the same as *M. minima*; *M. hirsuta* (L.) Bartal., l. c. 61, is an additional synonym, published at the same time as *M. minima*. Also to be regarded as synonyms, representing minor forms, are var. *compacta* Neyraut (pathological; cf. Reynier, 1906 and 1908) and var. *longiseta* DC., recognized in Fernald's 8th edition of Gray's Manual. Urban accepted var. *longiseta*, short-spined var. *brachyodon* Reichenb., and spineless or nearly spineless var. *pulchella* Lowe, in addition to var. *vulgaris* Urban. Howell (1949) has reported var. *pubescens* Webb from California and var. *viscida* Koch from Arizona. These correspond to f. *pubescens* (Webb) Urban and f. *viscida* (W. Koch) Urban; f. *mollissima* (Roth) Urban is a third form described in the monograph. Unlike his style under *M. hispida*, and contrary to his statement that Greek letters indicated forms rather than varieties, Urban listed the three as if they were varieties, crediting them to Webb, Koch, and (Roth) Koch, respectively. All are listed together immediately following the description of the species; they are not put under var. *vulgaris* nor any of the three other varieties, which are all listed together after the three forms. On grounds of uniformity with other parts of the monograph, and because Greek letters preceded them, Urban's names for the three forms must be regarded as new combinations, though he failed to mark them as such.

*M. ORBICULARIS* (L.) Bartalini, Catalogo delle Piante . . . alla Città di Siena, p. 60. 1776. The same combination published later by Allioni, Fl. Pedem. 1: 324-325. 1785.—*M.*



*polymorpha* var. *orbicularis* L., l. c. 779. 1753.—*M. orbiculata* Gaertn., De Fruct. et Semin. Pl. 2: 349. 1791. (An evident error for *orbicularis*.)—Urban states that the Linnaean Herbarium contains under this name two specimens “of the usual form,” with 3–4 compact spirals 13–15 mm. in diameter.

*M. POLYMORPHA* L., Sp. Pl. 2: 779. 1753. This includes the plants commonly known as *M. hispida*, *M. denticulata*, and *M. apiculata* (detailed synonymy given below, under the varieties and forms).

Few Linnaean species have undergone such thorough disintegration as *Medicago polymorpha*. All the thirteen original named varieties were soon raised to specific rank by various authors, and by the early 19th Century, the name *polymorpha* itself went completely out of use. (Later references to, or combinations based on “*M. polymorpha* Willd.” were errors for *M. polycarpa* Willd.) Under present rules, however, the name must be reinstated for some member of the original aggregate. Since it has not been in use for a century and a half, it has not become a permanent source of confusion and error. Unlike the names of the yellow-flowered species of *Trifolium*, it cannot be rejected on that account. Urban’s account of the Linnaean species reports herbarium specimens of 10 of the 13 varieties, but none marked as *polymorpha* only. The name therefore cannot be typified by a specimen. Linnaeus’s understanding of the components of his aggregate was very poor, as revealed in Urban’s notes on the specimens and citations. The pre-Linnaean *Historia Plantarum* of Morison was much superior to Linnaean works in the treatment of bur clovers, and gives illustrations. Unfortunately, the Linnaean citations for *Medicago polymorpha* alone (not the varieties) were to publications which offer little help. The diagnostic phrase-name is “*Medicago leguminibus cochleatis, stipulis dentatis, caule diffuso*,” quoted from *Hortus Cliffortianus* and *Hortus Upsalien-sis*, and from Royen and Dalibardus. Next is quoted “*Trifolium cochleatum, fructu nigro hispido*,” from Bauhin’s *Pinax*. No illustrations are cited. Following this is the list of 13 named varieties, each with one or more phrase-names quoted from various authors, and for 7 of them, references to figures.

The fact that the first two phrase-names stand separate from



all the named varieties indicates that the type should not include any of the latter. The doctrine of residues leads to the same conclusion, since all the varieties were early recognized as species under their own names. The only possibly helpful item in the first name-phrase is "stipulis dentatis," though this description was applied rather loosely to stipules varying from toothed to rather deeply lobed. The quotation from Bauhin specifies a plant with prickly pods, black at maturity. It is to be assumed that the species *polymorpha* must be a fairly common and widespread plant, and one which was known to Linnaeus. The plant best qualified, as fitting the meagre description, widespread, known to Linnaeus in 1753, and not one of the varieties named at that time, is the later-described var. *nigra* L., which is nomenclaturally identical with *M. hispida* Gaertn. (since the phrase-name for *nigra* is quoted in the original description of the latter, though the epithet is not). According to Urban, Linnaeus had specimens of *M. hispida* var. *pentacycla* (a synonym of var. *hispida*) filed under his varieties *coronata*, *ciliaris*, and *nigra*. The species best known to Bauhin (judging from Binz & Thommen's *Flore de la Suisse*, p. 217, 1941) were *M. arabica*, *M. hispida*, and *M. minima*, of which only the second was not named as a variety by Linnaeus in 1753. (Although much is made here of the suggestiveness of Bauhin's phrase, it is not to be inferred that *Medicago polymorpha* can be positively typified merely on that basis; it is likely that Bauhin included more than one species under his phrase-name.)

Admittedly the above arguments are weak, but something has to be chosen. There are specimens only for some of the Linnaean varieties. The pre-Linnaean citations are inconclusive, and in any case should not be permitted to disturb later usage any more than can be helped. The few possible approaches to redefining *Medicago polymorpha* all point to the complex *M. hispida* Gaertner, as treated by Urban. (Gaertner's figure is, to me, unidentifiable, and suggests *M. ciliaris* more than *M. hispida*; Urban's interpretation, which did not include designation of a type element among the infraspecific taxa, is accepted because it included var. *nigra*, which is technically the basis of the species *hispida*.) The selection of *M. hispida* var. *pentacycla* (DC.) Urban as type element is made on the



grounds that this form was represented in Linnaeus's herbarium, even though misidentified by him under several varietal names. There is flimsy support from the fact that var. *nigra* repeats a key word from Bauhin's phrase-name, and is identical with var. *pentacycla*. *Medicago hispida* as delimited by Urban is still quite polymorphic (a total of 15 infraspecific taxa are named); it is a common and widespread species (though less so in Linnaeus's or Bauhin's time than now); a majority of its forms have spiny pods, black at full maturity; it was known to Linnaeus in 1753, though not well understood by him. Lastly, replacement of *M. hispida* by *M. polymorpha* involves no general displacement of names in the genus, and need not occasion any great confusion. *Medicago polymorpha* Linnaeus is therefore here typified by the element later named var. *nigra*, or *M. hispida* var. *pentacycla* f. *longeaculeata* of Urban's monograph, p. 75.

As with *M. arabica* and *M. minima*, early writers frequently included more than one species or variety (as now understood) under the same name. Fortunately, Urban clarified the Linnaean and many post-Linnaean names so that the purely bibliographic phase of revising his nomenclature is less formidable than it might have been. The biological interpretation of the taxa is far more difficult. No adequate account can be made without extensive investigations in the Old World, including intensive field work, and cultural and cytogenetic studies. Geographic evidence—so far as it can be gleaned from published floras—suggests that Urban's arrangement of infraspecific categories (disregarding named forms) is a reasonable one, and may justifiably be retained for the present. It should be mentioned here that on page 44 of his monograph, Urban states that single Latin letters indicate varieties, Greek letters, forms. The latter have been erroneously quoted by Burnat and Briquet as subvarieties.

Urban's primary groups (aa. *microcarpa* and bb. *macrocarpa*) are at the level of subspecies, but were given no designation of rank by him; they are designated subspecies in Christiansen's *Neue kritische Flora von Schleswig-Holstein* (1953, p. 313). To avoid nomenclatural complications, they are not transferred here (see discussion under var. *ciliaris*). Only the last two



varieties occur in the United States (one of these as yet only under cultivation). For completeness, the two strictly Old World varieties are also included, and essential synonymy given for all four. Following is a translation and partial revision of Urban's key (omitting forms), with order reversed because of modified typification. As additional characters under leads 1a-1b, Urban has "veinlets of legume anastomosing freely and well before reaching lateral nerves" vs. "veinlets of legume anastomosing only close to lateral nerves, or not at all." These statements contradict descriptions given by some European writers, and do not fit the specimens which have been examined; they are therefore omitted.

- 1a. Diameter of middle spirals of legume 7-10 mm.
  - 2a. Spirals 4-6.....var. *polymorpha*.
  - 2b. Spirals 1½-4.....var. *tricycla*.
- 1b. Diameter of middle spirals of legume 4-6 mm.
  - 3a. Spirals 5-6.....var. *polygyra*.
  - 3b. Spirals 1½-3½.....var. *ciliaris*.

*M. POLYMORPHA* var. *POLYMORPHA*. *M. polymorpha* L., Sp. Pl. **2**: 779. 1753. (Emended.)—*M. polymorpha* var. *nigra* L., Mant. Pl. **2**: 454. 1771.—*M. hispida* Gaertn., De Fruct. et Semin. Pl. **2**: 349. 1791. (Based on the preceding.)—*M. lappacea* Desr. in Lam., Encycl. Meth. Bot. **3**: 637-638. Late 1791 or 1792. (*M. polymorpha* var. *ciliaris*, *M. polymorpha* var. *nigra*, *M. hispida*, all cited as synonyms.)—*M. nigra* (L.) Willd., Sp. Pl. (ed. 4) **3** pt. 2: 1418-1419. 1802.—*M. denticulata* var. *lappacea* (Desr.) Benth., Cat. Pl. Ind. Pyr. p. 103. 1826.—*M. lappacea* var. *macracantha* (Webb & Berth.) Lowe, Man. Fl. Madeira p. 158. 1868. (Based on *M. denticulata* var. *macracantha* Webb & Berth., Phyt. Canar. **2**: 64. 1836-1840. This reference not seen. Lowe cites as synonyms *M. lappacea* Desr., *M. nigra* "(Willd.) DC.")

According to Urban the following also belong here. *M. pentacycla* DC., Cat. Hort. Monsp. p. 124. 1813. *M. lappacea* var. *pentacycla* (DC.) Gren. & Godr., Fl. Fr. **1**: 390. 1848.—*M. hispida* (bb. *macrocarpa*) var. *pentacycla* (DC.) Urban, Verh. Bot. Ver. Prov. Brandenb. **15**: 75. 1873.

*M. POLYMORPHA* var. **tricycla** (Gren. & Godr.<sup>1</sup>) Shinnars, comb. nov. *M. lappacea* var. *tricycla* Gren. & Godr., Fl. Fr. **1**: 390. 1848. "Varie à courtes et à longues épines." The form



with long spines is taken as type.—*M. hispida* (bb. *macrocarpa*) var. *tricycla* (Gren. & Godr.) Urban, Ind. Hort. Bot. Berol. 1872 App. p. 3. (Not seen. Repeated in Verh. Bot. Ver. Prov. Brandenb. **15**: 75. 1873.)—*M. hispida* (aa. *macrocarpa*) var. *tricycla* f. *longispina* Urban, 11. cc. Including f. *microdon* (Ehrenb.) Urban, 11. cc., based on *M. microdon* Ehrenb., Cat. Sem. Hort. Berol. 1827 (not seen). Urban also lists "*M. obscura* var. *microdon* (Ehrenb.) Visiani" as synonym of this form, but Visiani (Fl. Dalm. **3**: 284, 1852) merely comments that Ehrenberg's plant "est varietas tuberculata *M. obscurae*," without making any formal transfer.

*M. POLYMORPHA* var. **polygyra** (Urban) Shinnars, comb. nov. *M. hispida* (aa. *microcarpa*) var. *polygyra* Urban, Ind. Hort. Bot. Berol. 1872 App. p. 4 (not seen); Verh. Bot. Ver. Prov. Brandenb. **15**: 74. 1873. Two forms are named (f. *inermis* Urban, f. *aculeata* Urban); the first is taken as the typical form.—*M. reticulata* Benth., Cat. Pl. Ind. Pyr. p. 101. 1826.

Judging from published references, this is a fairly definite geographic variety of the western Mediterranean region, spineless or with very short spines. In recent years experimental plantings of it have been made in Texas, under the erroneous name *M. sardoa*, which is a synonym of the next variety. *M. polymorpha* var. *polygyra* has not so far been found as a wild plant.

*M. POLYMORPHA* var. **ciliaris** (Ser.) Shinnars, comb. nov. *M. denticulata* var. *ciliaris* Ser. in DC., Prodr. **2**: 176. 1825. "M. ciliaris Savi cent. p. 148, non Willd." It is very unfortunate that Seringe did not supply a different epithet for this plant, so as to avoid confusion with *M. ciliaris* (L.) Krockner, based on *M. polymorpha* var. *ciliaris* L. As published, *M. denticulata* var. *ciliaris* must be treated as a new name, and is the first to be applied in varietal rank to the most widespread and commonly planted of the bur clovers. The identity of Savi's plant does not affect the application of Seringe's name, since the latter also gave a very brief description ("aculeis elongatis"), thereby validly publishing a new variety.

An awkward situation arises in connection with the nomenclature of this variety, due to conflict between Article 35 of the

<sup>1</sup> In a footnote under Leguminosae in the Flore de France it is stated "auctore Godron." The established custom of attributing new names to both authors is followed here, although very precisely only Godron should be mentioned.



International Code ("If any infraspecific taxon which includes the nomenclatural type of the epithet of the next higher taxon is to be mentioned by a subdivisional name, that name must repeat the epithet of the higher taxon unaltered") and paragraph 3 of Article 16 ("For any taxon below the rank of genus the correct name is the combination of the generic name with the earliest available legitimate epithet or epithets validly published with the same rank"). On grounds of priority, it is necessary to adopt the combination *M. polymorpha* var. *ciliaris*. But if subspecies are recognized, *M. hispida* ssp. *microcarpa* Urban (emend. W. Christiansen) must be transferred to *M. polymorpha*. Since it is identical as to type with var. *ciliaris*, and since var. *polygyra* would also be recognized under it, Article 35 would require the rejection of var. *ciliaris*, and adoption in its place of the new name, var. *microcarpa*, cited without author. The use of automatic epithets for typical varieties is a happy improvement when applied only to the type of a species. When extended to subspecies and varieties additional to the type, it becomes a very mixed blessing. I personally would retain Article 35 only for a hierarchy of epithets indicating the type of a species, but would reverse it with regard to other subspecies or varieties than the typical ones, on the grounds that only thus could changes of names be kept at a minimum. In the present case, for example, it would be more reasonable to say that var. *ciliaris*, being the oldest varietal epithet, must be retained; that as the earliest one, it should supply the subspecific epithet for any subsequent varieties associated with it. In other words, we would say ssp. *ciliaris* (no author) var. *ciliaris* (Ser.) Shinnars, rather than ssp. *microcarpa* (new combination) var. *microcarpa* (no author). Whichever procedure is followed, one has the license, so to speak, to remove names at will, merely by creating a new one in another category. As Article 35 stands now, the number of changes which must be or could be made is appallingly large. It would be made much smaller by the reversed arrangement for non-typical subspecies here suggested, though not entirely eliminated. For the present, the whole problem is evaded by omitting subspecies entirely.

An additional synonym of *M. polymorpha* var. *ciliaris* is *M. hispida* (aa. *microcarpa*) var. *oligogyra* Urban, 11. cc. Urban



lists three forms, treated by many recent authors as varieties, and by some as species. They are assigned names here solely for purposes of discussion, and convenience in listing synonymy.

*M. POLYMORPHA* var. *CILIARIS* f. *CILIARIS*. Length of spines equalling or exceeding radius of spirals. This is the plant which passes in the United States as typical *M. hispida*, which it is in the sense of Urban, but not as to type. True *hispida* (*M. polymorpha* as here delimited) is not found either wild or commonly cultivated in this country. There is a long list of actual and *sensu* synonyms for f. *ciliaris*; only the following need be listed here. *M. denticulata* Willd., Sp. Pl. (ed. 4) 3 pt. 2: 1414. 1802.—*M. denticulata* var. *vulgaris* Benth., Cat. Pl. Ind. Pyr. p. 103. 1826. (*Fide* Visiani.)—*M. hispida* (aa. *microcarpa*) var. *oligogyra* f. *denticulata* (Willd.) Urban, 11. cc.

*M. POLYMORPHA* var. *CILIARIS* f. ***apiculata*** (Willd., emend. Urban) Shinnars, comb. nov. Spines shorter than radius of spirals. *M. apiculata* Willd., l. c. 1414. 1802. (As delimited by Urban, 11. cc.).—*M. hispida* (aa. *microcarpa*) var. *oligogyra* f. *apiculata* (Willd.) Urban, 11. cc.—*M. hispida* var. *apiculata* (Willd.) Burnat, Fl. Alpes Mar. 2: 106. 1896.—*M. denticulata* var. *brevispina* Benth., Cat. Pl. Ind. Pyr. p. 103. 1826. (*Fide* Visiani.)—According to Grenier & Godron and others, the following belongs here. *M. sardoa* Moris, Stirp. Sard. Elench. p. 15, 1827 (*nomen nudum*); ex G. Don, Gen. Syst. Dichlam. Pl. 2: 170. 1832. As mentioned before, plants in experimental cultivation as *M. sardoa* are *M. polymorpha* var. *polygyra*, or *M. reticulata* Benth.

*M. POLYMORPHA* var. *CILIARIS* f. ***tuberculata*** (Gren. & Godr.) Shinnars, comb. nov. Spines absent; spirals smooth or merely tubercled. *M. polycarpa* var. *tuberculata* Gren. & Godr., Fl. Fr. 1: 390. 1848.—*M. hispida* (aa. *microcarpa*) var. *oligogyra* f. *tuberculata* (Gren. & Godr.) Urban, 11. cc.—*M. apiculata* var. *confinis* W. Koch, Syn. Fl. Germ. Helv. p. 164. 1835.—*M. hispida* var. *confinis* (W. Koch) Burnat, Fl. Alpes Mar. 2: 106. 1896.—The name *apiculata* has been applied to this form, and Willdenow's original description ("margine muricatis," "margine tuberculis admodum parvis spinescentibus obsita") suggests that he had this chiefly in mind. There is no sharp break between the three forms. Urban, who examined the



Willdenovian herbarium, was entitled to emphasize "spinescentibus" in delimiting the form as he did. It should be noted here that Grenier & Godron do not mention the earlier-named *M. tuberculata* Moris, Fl. Sard. 1: 447, 1837. They do list as synonym of their var. *tuberculata* "*M. confinis* Koch, olim," overlooking the fact that Koch had put his epithet into print, as a variety.

The three above forms intergrade completely. In the United States, selection of seed for agronomic purposes tends to fix a limited number of forms. Since escapes from cultivation are a major source of our wild plants, there is in reality an artificial selection, giving the impression that the forms are better marked or more permanent than is really the case. In eastern Texas, f. *ciliaris* is a common weed, while f. *tuberculata* is rare. The two intergrade freely when growing together, and this is said to be true of these two and var. *polygyra* when grown together under cultivation. Comments of some European authors (especially Lowe and Visiani) indicate that this is also true where the plants are native, and justifies Urban's treatment of the three so-called species as forms. Reasons for accepting var. *polygyra* in that rank (likewise Urban's treatment) have already been mentioned.

*M. PRAECOX* DC., Cat. Hort. Bot. Monsp., pp. 123-124. 1813. Reported by J. T. Howell as found in 1954 in Butte and Tehama counties, California (Leaflet West. Bot. 7: 199, 1954).

Only those works giving helpful taxonomic, ecological, or geographical information are listed below. I am indebted to Mrs. Lazella Schwarten, Librarian, Harvard University Herbarium, for transcriptions of the original descriptions of *Medicago reticulata* Benth and *M. sardoa* Moris.—SOUTHERN METHODIST UNIVERSITY, DALLAS, TEXAS.

#### LITERATURE CITED

- BRIQUET, JOHN. 1913. Prodrôme de la Flore Corse, Tome II. (*Medicago*, pp. 256-274.)—This usually reliable and very helpful work falls down badly with regard to *Medicago*.
- BURNAT, EMILE. 1896. Flore des Alpes Maritimes, Vol. II. (*Medicago*, pp. 93-110.)
- CHRISTIANSEN, WILLI. 1953. Neue kritische Flora von Schleswig-Holstein. (*Medicago*, pp. 292-293, 313-314.)—Disappointingly uncritical.



- HEGI, GUSTAV. 1923. Illustrierte Flora von Mittel-Europa, Band IV, 3. Teil. (*Medicago*, pp. 1248–1275.)
- HOWELL, JOHN THOMAS. 1949. *Medicago minima* in California and Arizona. Leaflet West. Bot. **5**: 187.
- HYLANDER, NILS. 1945. Nomenklatorische und systematische Studien über nordische Gefäßpflanzen. Uppsala Universitets Årsskrift 1945: 7. (*Medicago minima*, p. 223.)
- INTERNATIONAL CODE OF BOTANICAL NOMENCLATURE. 1952. (Regnum Veg. vol. 3.)
- LOWE, RICHARD THOMAS. 1868. A Manual Flora of Madeira. Vol. I. (*Medicago*, pp. 156–157.)
- REYNIER, ALFRED. 1906. Deux anomalies végétales analogues. Bull. Soc. Bot. France **53**: 65–68.
- . 1908. La prétendue espèce *Medicago ononidea* De Coincy n'est qu'une forme pathologique du *M. minima* Lmk.—Demonstration concluante. l.c. **55**: 553–557.
- URBAN, I. 1873. Prodromus einer Monographie der Gattung *Medicago* L. Verh. Bot. Ver. Prov. Brandenb. **15**: 1–85. (Classification of *M. hispida* was outlined in Ind. Hort. Bot. Berol. 1872 App. pp. 3–4; publication not seen.)
- . 1877. [Remarks on *Medicago*, with seed key to 10 species, in Sitzung vom 31. August 1877.] Verh. Bot. Ver. Prov. Brandenb. **19**: 125–134.
- . 1883. Die *Medicago*-Arten Linne's. Ber. Deutsch. Bot. Ges. **1**: 256–262.
- VISIANI, ROBERTUS DE. 1852. Flora Dalmatica, Tom. III. (*Medicago*, pp. 279–285.)
- WAGNER, FRED H. 1948. The bur clovers (*Medicago*) of Texas. Field & Lab. **16**: 3–7.